

correspondingly greater. It is, of course, evident that the determination of small quantities of blood in the stomach does not give us a diagnostic sign, but Boas believes it is an important addition to our methods of diagnosis. It may help us to distinguish doubtful cases of ulcer from gastric neuroses, and if it be a question of carcinoma the great frequency of the presence of blood in this condition is in sharp contrast to the fact that in chronic anacid gastritis, as well as in gastric neuroses, no blood has been found. Inasmuch, however, as ulceration which occurs in the majority of all cases of carcinoma is not a very early symptom, the presence of blood in most instances will hardly help us to an early diagnosis. Boas further raises the question as to whether the constant loss of small quantities of blood may not play an important part in the development of the so-called carcinoma cachexia.

SURGERY.

UNDER THE CHARGE OF

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The Advantages and Disadvantages of Drainage after Abdominal Operations.—ROBB (*Journal of the American Medical Association*, July 6, 1901) reports two series of cases, in the first of which there were 114 and in the second 108 consecutive unselected abdominal sections without a death. In a paper published in 1890 the author summarizes the indications for drainage as follows: 1. To provide a means of escape for the serous oozing which follows the separation of broad adherent surfaces. 2. To guard against septic peritonitis from retained pus from the tube, ovary, or other viscus. 3. To remove fluid in cases of persistent capillary hemorrhage. 4. To provide against hemorrhage in cases of hysterectomy when the pedicle is dropped. 5. To drain the peritoneal cavity and starve out the disease in cases of chronic or tubercular peritonitis. The following objections to the insertion of drainage-tubes have been formulated by Welch: "1. They tend to remove bacteria which may have gotten into a wound from the bactericidal influence of the tissues and animal juices. 2. Bacteria may travel by continuous growth or in other ways down the sides of the drainage-tubes, and so penetrate into a wound which they otherwise would not enter. We have repeatedly been able to demonstrate this mode of entrance into a wound of the white staphylococcus found so commonly in the epidermis. The danger of leaving any part of the drainage-tube exposed to the air is too evi-

dent to require mention. 3. The changing of dressings necessitated by the presence of drainage-tubes increases in proportion to its frequency the chances of accidental infection. 4. The drainage-tube keeps asunder tissues which might otherwise immediately unite. 5. Its presence as a foreign body is an irritant and increases exudation. 6. The withdrawal of tubes left for any considerable time in wounds breaks up forming granulations—a circumstance which both prolongs the process of repair and opens the way for infection. Granulation tissue is an obstacle to the invasion of pathogenic bacteria from the surface, as has been proved by experiment. 7. After the removal of the tube there is left a track prone to suppurate and often slow in healing." To these Halsted has added: 8. "Tissues which have been exposed to the drainage-tube are suffering from an insult which more or less impairs their vitality and hence their ability to destroy or inhibit organisms."

But beside increasing the chances of infection, drainage not infrequently gives rise to various post-operative complications. Of these Clark mentions: 1. Obstruction of the bowel. 2. Fecal fistulæ. 3. Vesical complications. 4. Post-operative herniæ. It is a well-known fact, and one proved by the most conclusive experiments, that under normal conditions the peritoneum can dispose of pyogenic organisms in no inconsiderable quantities without the occurrence of peritonitis. Nor must it be forgotten that drainage does not by any means always remove all foreign fluids and infectious matter, so that in not a few cases its employment will offer all the many disadvantages referred to above without accomplishing the main object. Clark has noted that the introduction of drainage material handicaps the peritoneum in three ways: 1. The normal peritoneal currents are disturbed, consequently the circulation of fluids and foreign matter toward the diaphragm is retarded. 2. A reactive inflammation is set up about the drain, limiting and impeding the action of the peritoneum. 3. Within a few hours the general peritoneum is cut off from all participation in the work of absorption by the wall of adhesions around the drain. In place of the natural agencies the work is thrown upon an agent which at best can only remove the fluid from a small pocket.

When gauze is used it soon becomes choked by the serous or bloody fluid which fills up its meshes and quickly coagulates. A limited quantity of fluid will be removed during the first two hours, but after that the drain acts like a plug, by preventing the outflow of fluid, which then accumulates in the dependent pockets.

The methods for prevention or the removal of infective material without the employment of drainage may be summarized as follows: 1. A thoroughly aseptic technique. 2. The controlling of all hemorrhage and oozing as far as possible. 3. Careful manipulation, so that all unnecessary bruising of the tissues is avoided. 4. A perfect toilet of the peritoneal cavity. 5. The removal as far as possible of infectious foci. 6. The use of irrigations with salt solution. 7. If necessary the reopening and thorough cleansing of the cavity. 8. Proper after-care of the patient. The author states that he has used drainage only once in 222 consecutive cases, and in this case the only reason that it was used was that there was a large pus sac present, communicating with the vagina and peritoneal cavity, which it was impossible

to remove. In the author's two series of 222 cases, he reports finding pus in 65, or 28 per cent. After a wide experience before 1893, with drainage, and practically not having used it since then, the author believes that patients, as a rule, do very much better if drainage is not used. Not only have the immediate results been better, but the ultimate results, such as the occurrence of hernia and intestinal adhesions, have been avoided.

The Treatment of Abdominal Aortic Aneurism by a Preliminary Exploratory Coeliotomy and Peritoneal Exclusion of the Sac, followed at a Later Sitting by Wiring and Electrolysis.—MATAS (*American Medicine*, June 29, 1901) states that of the fifteen reported cases treated by this method all but three have died. A careful examination of the histories of these three cured cases tends to bear out the conclusion that aneurisms which originated low down on the abdominal aortic tract, especially below the superior mesenteric, all other conditions being equal, are much more favorable for attack by this method than those seated higher up in the coeliac area. The objections to this method of treatment are: 1. The cure of the aneurism may lead to the death of the patient by obliterating the orifice of important visceral arteries. This is most likely to occur in dealing with aneurisms of the upper or coeliac division of the abdominal aortic tract—i. e., in about 50 per cent. of the cases. 2. Secondary rupture of the sac from the strain put upon weak portions of the sac in multilocular aneurisms after partial coagulation of the contents has taken place is particularly likely to occur in subjects of general endarteritis with atheroma. 3. Escape of wire through a large aneurismal orifice into the lumen of the aorta, with migration upward into the heart, leading to perforation, traumatic endarteritis, endocarditis, with the formation of secondary thrombi and emboli. 4. Danger of perforating the sac by stiff wire or by overcrowding the sac with too much wire. 5. Danger of extension of clot from the coagulum in the aneurism to the main artery, leading to fatal blockade at the bifurcation, with gangrene of the lower extremities. 6. Danger of rupture of sac from sudden withdrawal of abdominal support and displacement of adherent organs in the course of the exploratory laparotomy. 7. Danger of mistaking a fusiform for a sacciform aneurism. 8. Danger from emboli and thrombi following incomplete coagulation of the blood in the sac (a very rare and practically unknown occurrence in abdominal cases). 9. Danger of shock. 10. Danger of sepsis. In the presence of this formidable array of dangers which beset the application of this method, one must ask what are the conditions, if any, which are favorable to its successful application? Theoretically possible, but clinically rare, are the following conditions: (1) The aneurism should be saccular; (2) it should be unilocular; (3) it should be provided with fairly strong, resisting walls; (4) the patient should be young or middle-aged, fairly healthy, and free from general endarteritis and atheroma; (5) the aneurismal orifice communicating the sac with the lumen of the parent artery should be small; (6) the aneurismal sac should spring from the lower, inframesenteric division of the artery, preferably between the origin of the superior mesenteric and the bifurcation; (7) if given off from the coeliac region the orifice should be situated on the posterior or lateral wall of the aorta. With these ideal conditions, and with a perfect

technique, the chances of permanent cure would be immensely increased and the operation could be undertaken with great probability, almost certainty, of success. But as the most important of these conditions can never be ascertained *intra vitam*, and one is thus unable to differentiate clinically between the favorable and the unfavorable cases, the author is forced to conclude that the Moore-Corradi method as at present applied, and in spite of the undoubted improvements that have been made in its technique, is a most dangerous procedure, essentially lacking in the elements of that scientific precision and knowledge of avoidable perils which are necessary to elevate it out of the plane of empiricism and surgical experimentation. Its chief recommendation now rests upon the naked fact that in three out of fifteen recorded cases (20 per cent.), it has actually arrested the progress of aneurisms and saved life. Apart from this clinical fact, it can claim but little else in its favor except that in the presence of almost certain death from the disease when allowed to follow its natural evolution, even a remote possibility of survival by operation is better than no chance at all.

The author states in conclusion that in the light of present experience we should restrict our recommendation of the combined method to that small group of comparatively favorable cases in which the aneurisms are confined to the inframesenteric portion of the aorta, and then only after other safer methods of treatment had been tried and failed. In aneurisms situated in the upper part of the aortic tract, the boundaries of which cannot be even approximately determined, the author regards this procedure in the light of a pure experiment—a veritable surgical adventure—which would be justified solely by the imminent danger of death from rapid progress of the disease which threatened rupture of the sac, and associated with great suffering. Even then the operation could not be recommended, but should be undertaken solely at the urgent solicitation of the patient after a thorough understanding that the chances would be no less than 70 per cent. against his recovery from the operation.

A Report of Twenty four Operations Performed during Spinal Analgesia.—BAINBRIDGE (*Medical News*, May 4, 1901), after reporting in detail the results of twenty-four cases, states that the following conclusions are made from fifty cases, which include those just noted: 1. Cocaine is far more satisfactory than eucaine. The latter is less potent, more evanescent, the areas of analgesia are frequently "patchy," having the pain sense retained all around them and not being so complete below definite levels. The cocaine produces no more unpleasant after-effects than eucaine, and is decidedly more reliable. 2. Analgesia to the level of the diaphragm can be depended upon in all cases where a moderate dose of a potent solution of cocaine has been introduced by lumbar puncture. In some the analgesia is sufficient for operation on the upper extremities. 3. Complete analgesia, including the eyes, mouth, and throat, has occurred. It does not entail more severe after-effects than when the lower extremities only are involved. 4. The preparation of the patient as for a general anæsthetic diminishes all the unpleasant effects of cocaine and eucaine, and often prevents them altogether. 5. By moderate doses of bromides before the injection the initial vomiting is frequently avoided and the liability of headache lessened.

6. In neurotic patients there are often hysterical symptoms directly following the completion of the injection; but, as a rule, in a few moments a calm follows and the patient lies perfectly still. 7. Initial nausea and vomiting often occur soon after the puncture, but last only for a moment or two, and usually do not recur during the operation. As consciousness, as well as the muscular power, is preserved, the danger of the introduction of the vomitus into the lungs is practically *nil*. 8. Analgesia lasts from thirty minutes to four hours. 9. Depression after the puncture is considerable. The use of ethyl chloride (Bengue) largely prevents pain when the needle is introduced. 10. The preparation of the patient, the use of nitroglycerin by hypodermic injection, or the employment of coal-tar products with caffeine, control the headache, which is in many instances an after-effect of spinal puncture. 11. In a few cases there may be motor paraplegia or vertigo. Both are temporary. 12. Spinal puncture has not affected normal or diseased kidneys. 13. Usually the tactile power, muscular sense, and the ability to detect heat and cold are retained. The cautery at a dull red heat causes no pain, while hot water produces marked discomfort. 14. Usually the patient sleeps the first night. 15. There is often a temperature of a few degrees within eight or ten hours of the operation. Whether this is the direct result of the puncture or the effect of psychic disturbances is not determined. The circulation and respiration are not seriously embarrassed.

The Diagnosis and Surgical Treatment of Renal Tuberculosis.—BROWN (*Boston Medical and Surgical Journal*, May 30, 1901) states that for obvious reasons, in this malady, no one can speak authoritatively, either as to the final results of supposed radical surgical treatment, or, on the other hand, as to the certain progress toward a fatal termination of all cases which are not treated in some way. Despite the immense amount accomplished by earnest labor in the field of tuberculosis, one must hope that something more specifically curative than the knife, sanitation, or the piney woods may soon be discovered. In other localizations of the disease the importance of early diagnosis has long been appreciated; but when the kidney is involved, recognition of the fact is apt to be unfortunately tardy. In all cases of pyelitis, nephritis, and cystitis the etiology should be determined or at least most diligently sought for. In order to secure more satisfactory results from surgical treatment, renal tuberculosis must be detected in anticipation of rather than long after the objective symptoms have become so conspicuous as not alone to render differentiation of the urine difficult, but to have involved so much of other parts of the urinary tract as to preclude a radical operation. Urinary analysis in general should mean as careful a routine search for tubercle bacilli as is customarily given to the other formed elements of a sediment. There are cases of renal tuberculosis where the lesions are not in open communication with the urinary channels, hence the micro-organism is not possibly attainable for microscopical or inoculation evidence. It is not so very unusual for an open tuberculosis renal lesion to shed so few bacilli that persistent microscopical search fails to find them. Here animal inoculation should always be early resorted to. Sometimes the subjective symptoms are quite pronounced, even in the early stages of the disease; in other cases the pains are little noticed in advanced stages of the

trouble, except by the behavior of the bladder, and too often these vesical symptoms are cited as evidence that this viscus is the original and only seat of the trouble. A dull aching in the lumbar region is significant; equally so is a much more acute kind of pain referable to the kidney or ureter. When these occur as crises, associated with nausea and vomiting, renal calculus or gravel colic is most apt to be thought of. So many cases give a history of having had systemic manifestations resembling mild malaria, that they seem as not infrequent precursors to the more distinctly localized later symptoms. Often the first symptom is increased frequency of urination, but in the majority of cases this does not appear until the lower segment of the ureter has either acquired a genuine tuberculous lesion or at any rate marked hyperemia and oedema have developed, with irritation around the mouth of the ureter. The principal objective symptoms are a kidney which is larger and more tender than normal, as well as all grades of pyuria and hæmaturia, beside a just appreciable or a very marked diurnal variation in temperature; loss of color and weight; a reaction to tuberculin; finally, the presence of tubercle bacilli in the urine derived directly from one or both kidneys. The author believes that the injection of tuberculin is valuable as an aid to diagnosis in doubtful cases. The mortality of nephrectomy for tuberculosis is low, averaging from 5 to 7 per cent. The incision varies, but the operation should be performed by the extraperitoneal route.

During a nephrectomy for renal tuberculosis, if the disease is seen to extend down the ureter to a point below the first sacral vertebra, the author does not urge that a total extirpation should then, or even at a later operation, be done. Several of his observations tend to the inference that a considerable amount of tuberculous ureter can be left with comparative safety; because, now being in a functionless state of repose, this particular focus is amenable to curative systemic processes. At the same time sufficient experience has not been accumulated to assert that a routine practice based on this presumption is always the best surgery. If total removal did not necessitate such an increased operative exposure, the radical step would better satisfy the surgical indications here just as well as in dealing with any tuberculosis. If it were thoroughly ascertained that a ureter was diseased from kidney to bladder, and the operator felt inclined to do a total extirpation or none, it might improve the patient's chances to have a primary ureterectomy of the lower half, while the proximal end of the tube was given a temporary cutaneous implantation, there to drain the kidney until an early favorable time for nephrectomy. In this order the services of both kidneys would be available for convalescence from one operation. Even in cases presenting tuberculous vesical lesions where only one kidney is similarly diseased, the author thinks that nephrectomy is indicated in a certain number of such individuals as offering the best chances for extension of life and comfort. Every reasonable effort should be made to determine the condition of each kidney before any operation is done for the relief of vesical symptoms, because nothing can be gained by this latter step so long as tuberculous debris is coming into it from above. The author states in conclusion that too great pains cannot be taken by physician and surgeon to determine the location and extent of the disease before determining upon the treatment. The integrity of the other kidney, of course, has great bearing on the surgical

aspects of any case. To determine in any particular case just what rate of progress the disease may pursue if left untreated, or what degree of immunity from some of the annoying symptoms we can promise the patient by nephrectomy, is not easy. In ward hospital cases the immediate operation appears to be the only alternative. For those who can afford climatic changes and rest a careful preliminary observation of the existing conditions of the urinary tracts should precede their travels, and the same examination, when at all indicated, should be repeated in order to keep posted regarding such an advance of the disease as to call for operation.

Orchitis and Epididymitis in Typhoid Fever.—KINNICUTT (*New York Medical Record*, May 25, 1901) reports two cases of this rare sequel or complication of typhoid fever. Eshner, in 1898, after a careful review of the literature, was able to collect only 44 cases, and Do collected the statistics of complications occurring in 14,738 cases of typhoid fever without finding a single case of orchitis and epididymitis. In Osler's series of 829 cases of typhoid fever, orchitis or epididymitis was observed only in 2 instances, both unattended with suppuration, and in the 889 cases treated by the author and his colleagues in the Presbyterian Hospital the lesion was noted only in the two cases which the author reports. It is probable that the frequency of this complication is greater than the statistics indicate. Aside from cases which presumably have not been reported, the fact that in the 44 cases collected by Eshner, 5 occurred after the second week of convalescence—one of these, as late as the ninth week—suggests the presumption that cases occur in which the true origin of the orchitis is not suspected. The first case, aged twenty-four years, was admitted to the hospital on the seventh day of his illness. The infection was of a moderately mild type, the maximum temperature not exceeding 104.5° F. He was treated by the cold bath, and the illness was in every way uneventful. The morning and evening temperatures were normal on the twenty-third day. There was a marked increase in the leucocytes on the fifteenth day, which lasted for three days, and then gradually disappeared. The urine was slightly albuminous, but at no time were casts found. The catheter was not used, and there was at no time any urethral discharge. There was no history nor evidence of gonorrhœal infection in the past. On the fifth day of normal temperature the patient complained of pain in the right groin and the temperature rose to 101°. Examination the next day showed that the cord was enlarged, hard, and sensitive in the inguinal canal. The following day the swelling had reached the external ring, and in the course of the succeeding twenty-four hours the morbid process had extended to the epididymis and testicle. These became markedly swollen and very sensitive. There was no effusion into the tunica vaginalis. Almost simultaneous with the swelling of the cord, phlebitis of the long saphenous vein developed. The swelling of the cord and testicle gradually subsided, and on the sixteenth day after the first appearance of the symptoms the only evidence consisted of a trifling induration and sensitiveness of the epididymis, sensitiveness along the course of the saphenous vein, and moderate swelling of the leg and thigh. When examined ten weeks later all physical signs of a lesion of cord, epididymis, and testicle were absent. The second case was thirty-four years of age, and developed

orchitis and epididymitis at the end of the febrile period. Examination showed the seminal vesicles to be normal, the prostate enlarged but not tender, and some fluctuation over the testicle. Aspiration at the point of fluctuation was made, and a small quantity of pus obtained; this contained the typhoid bacillus in pure culture. The swelling and sensitiveness of the cord, testicle, and epididymis have only partially subsided, and there is still a sinus leading to the body of the testicle through which minute shreds of necrotic tissue are occasionally extruded.

In the fifty-three cases of testicular inflammation occurring in the course or during the convalescence of typhoid fever, which comprise the literature of the subject, suppuration developed in thirteen. Bacteriological examination demonstrated the presence of Eberth's bacillus in pure culture in the pus from six of the cases. In a single instance pyogenic cocci alone were found. The remaining six cases were reported prior to or about the date of Eberth's discovery of the specific bacillus of typhoid fever.

In one non-suppurative case Eberth's bacillus was found in pure culture in the sero-sanguinolent fluid obtained from an aseptic puncture of the testicle.

In view of the bacteriological findings, the usual origin of orchitic lesions in typhoid fever cannot be doubted. Apparently only exceptionally is the infection due to other micro-organisms than Eberth's bacillus. It remains to consider the probable channels of infection.

It is probable that the bacilli reach the testicle both by the blood stream and from the urethra through the intermediary of the vas deferens. That Eberth's bacillus in great numbers is found in the urine in a large percentage of cases of typhoid fever is now well known.

It may be of interest to analyze briefly Eshner's forty-four cases and the nine additional ones which the author is able to add, of orchitis and epididymitis occurring in the course or during the convalescence of typhoid fever, comprising all cases found in the literature of the subject which give sufficient detail to be of value.

Sixteen cases developed during the course of the fever. Of these, one occurred during the second week, six during the third week, two during the fourth week, one during the fifth week, one during the sixth week, two during the seventh week, two "at defervescence," and one at a time not definitely stated. Thirty-five cases developed during convalescence. Of these, eleven developed during the first week, seven during the second week, three during the third week, one during the fourth week, one during the fifth week, one during the sixth week, eleven at a time not definitely stated. In two cases the date of development is not given. In two cases the inflammation affected both sides, in forty-five it was unilateral, and in six cases no statement is made of its localization. Of the unilateral cases, twenty-two were on the right side, twenty-one on the left, and in the remaining two it is not stated on which side. The epididymis only was involved in seven cases; the testicle only in sixteen cases; both epididymis and testicle in twenty-six cases; and in the remaining four a distinction is not made between the testis proper and the epididymis. There was effusion into the tunica vaginalis in nine cases; in ten, it is noted that such effusion was absent; and in thirty-four no statement is made on this point.

Suppuration occurred in thirteen cases, partial necrosis in five cases, complete necrosis in two cases, and death in two cases, but without apparent relation to the complication. Recovery with residual nodules in the epididymis is noted in seventeen cases; the subsequent histories of these cases would be of interest. The bacteriological examinations of the pus in the suppurating cases have been given earlier in this paper.

A study of these cases justifies the following conclusions: 1. Epididymitis or orchitis occurring in the course or during the convalescence of typhoid fever is a rare lesion and is of typhoidal origin. 2. Only very exceptionally it is due to secondary microbic infection. 3. It develops at a late period in the disease or during convalescence. 4. The lesion, although as a rule unilateral, may be bilateral, and involves either the epididymis or testicle or both, and not infrequently the cord. 5. Effusion into the tunica vaginalis is rare. 6. Termination most often is by resolution. 7. Suppuration occurs in 25 per cent. of all cases. 8. Localized necrosis and extrusion of testicular tissue is not uncommon. 9. Exceptionally there is destruction of the entire testicular structures. 10. Atrophy of the testicle occurs, but is a rare sequence. 11. The lesion gives rise to little constitutional disturbance. 12. Death as a direct result of the lesion has not been noted.

Notes on 206 Operations for Stone.—ADAMS (*British Medical Journal*, May 25, 1901) states that the operation of choice is lithotripsy unless one of the following contraindications prevents: In boys (1) when there is marked cystitis, lithotomy drains the bladder and cures both diseases; (2) when there is much difficulty in passing instruments; (3) when the stone is too large or hard for the necessarily small lithotrite; (4) when there are indications of advanced kidney disease or great debility, the shock of the cutting operation seems less severe, probably because it is briefer. In men (1) when the instruments cannot be passed; (2) when the stone is too large or cannot be grasped. The author has never found a stone too hard. A former operation often renders the introduction of instruments difficult. Lithotripsy was successful in the smallest boys. Forty-eight cases were in boys under ten years of age. Only one death occurred in a boy, aged three and one-half years, whose bladder was full of calculi, weighing in all seven drachms. Fifteen of these cases were in children under three years of age, and all did well. Three of the thirty-six cases of lithotomy and three of the 161 cases of lithotripsy died. The author concludes with this brief table of cases: With calculi extracted through the meatus, 4; urethral calculi extracted by external urethrotomy, 2; vesical calculi removed by lithotripsy (males, 153; females, 8), 161; vesical calculi removed by perineal lithotomy, 36.

The Surgery of Gastric Ulcer.—ANDREWS (*Chicago Medical Recorder*, May, 1901) states in conclusion: (1) Gastric ulcer is a surgical disease; (2) perforating ulcer should be treated by laparotomy as early as possible; (3) bleeding gastric ulcer should be treated by operation after resisting medical treatment; (4) gastric ulcers produce and are also caused by pyloric obstruction, and this calls for operation. Many obscure and obstinate stomach troubles are caused by this cicatricial obstruction, and can be cured very safely by surgical intervention.